

SHOCKWAVE

Operations & Service Manual
with Illustrated Parts Breakdown

SUSPENSION SEAT MODELS

S2 S3



SHOCKWAVE MARINE SUSPENSION SEATING

2074 Henry Avenue, Sidney BC Canada, V8L 5Y1

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SHOCKWAVESEATS.COM

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■ **HOW TO GET HELP**

We are here to help! Call or email us if you have any problems, questions or concerns.

ADDRESS	2074 Henry Avenue, Sidney BC Canada, V8L 5Y1
PHONE	+1.250.656.6165
FAX	+1.250.655.4334
EMAIL	support@shockwaveseats.com
HOURS	8 AM to 5 PM Pacific Standard Time
WEBSITE	shockwaveseats.com



■ **SERVICE TIPS**

- Drawings, Illustrated Parts Breakdowns, Warranty and Equipment Lists are supplied according to the seat(s) ordered and are delivered with the seats. Copies of all of these documents and the latest Service Bulletins are available on the SHOCKWAVE website.
- If the problem is a shock leaking, please change the fill valve first to see if that solves the problem. If it does not, perform a simple soap solution test to identify the source of the problem.
- Tell us what the problem is. Be sure to answer all of the Who, What, When, Where and Whys of the situation so we have a clear understanding of the problem, possible causes and fixes.
- Please identify the product you are referring to by supplying the serial number located on the rear cover of the suspension module.
- Tell us who you are and what your relationship is with the boat.
- Take wide angle and close up photos of the problem.
- Let us know where you are located and contact information.
- Tell us the urgency of the problem.
- Refer to the warranty section of this document for more information.

IMPORTANT SAFETY INFORMATION

DANGER

Your SHOCKWAVE Seating will mitigate the effects of shock and vibration, reducing the potential of injury, but it will **NOT** prevent the possibility of injury. The increased level of comfort and control provided by SHOCKWAVE MARINE SUSPENSION SEATING will allow for the operation of the craft at higher speeds in sea states which create high shock loads on the craft and potentially the occupants; **SHOCK LOADS THAT COULD POTENTIALLY EXCEED THE SEAT'S CAPABILITIES TO MITIGATE.**

Operating marine craft in a high shock load environment is inherently hazardous. Tolerance to the effects of shock and vibration vary from person to person and it is the responsibility of the craft operator to ensure the safety of each person onboard. Pain and/or discomfort are indicators of a potential injury. Constantly monitor the physical state of the craft and the personnel onboard. Hazardous operation of the craft may result in serious injury, death or damage to the craft.

WARNING

- Do not modify the seating by drilling extra holes, removing material, or adding extra equipment. **Serious injury can result.**
- Do not use seating if it is, or appears to be, damaged. **Serious injury can result.**
- Do not use seating if seat to deck attachments are loose. **Serious injury can result.**
- Do not use seating if seat ride height is lower than normal. **Serious injury can result.**
- Do not operate seat with incorrect pressure in shock. **Serious injury and damage can result.**

CAUTION

- Do not use seating for uses other than its intended purpose. **Damage to the seating or bodily harm may result.**
- Do not use seating if fasteners are loose. **Damage to the seating or bodily harm may result.**
- Do not attempt to open, perform maintenance or repair seating while craft is underway. **Damage to the seating or bodily harm may result.**
- Do not place items under or around the seat that may interfere with the seat's range of motion. **Damage to the seating or bodily harm may result.**

IMPORTANT

Follow **IMPORTANT** instructions located throughout the Operations and Service Manual to prolong the appearance and service life of your SHOCKWAVE Seating.

SEAT MOUNTING REQUIREMENTS

- The seat must only be installed on a completely flat surface of sufficient strength to support the fully loaded seat without flexing.
- The deck mounts or suspension module must not be modified.
- Any modifications, alterations or addition of any equipment must be approved by SHOCKWAVE.
- Ensure that the movement of the seat does not interfere with the vessel structure or equipment.
- Ensure all fasteners are properly torqued.
- Check operation of suspension after installation. It must not bind or stick.

DANGER

Incorrectly installed seats can cause damage to the seat and serious injury or death.

CAUTION

If the seat deck mounts are not parallel and perpendicular to the deck they will distort the suspension module and cause it to jam.

IMPORTANT

Warranty is void on seats where incorrect installation causes damage to the seat. Strength of decks and deck mountings is the responsibility of the boat builder or installer of the seats. SHOCKWAVE assumes no liability for seats that are incorrectly installed.

FASTENER TORQUES

All fasteners are prone to becoming loose from sustained high-performance use. SHOCKWAVE recommends that all bolts should be visually inspected for signs of being loose. Always use a thread-locker on fasteners to prevent loosening. Please use the reference table below:

SIZE	PITCH	TORQUE (STAINLESS)	
		Dry	Lubricated
IMPERIAL			
#6	32	10 in-lbs	9 in-lbs
#8	32	21 in-lbs	17 in-lbs
#10	24	23 in-lbs	20 in-lbs
	32	33 in-lbs	28 in-lbs
1/4"	20	6 ft-lbs	6 ft-lbs
	28	8 ft-lbs	7 ft-lbs
5/16"	18	11 ft-lbs	9 ft-lbs
3/8"	16	20 ft-lbs	17 ft-lbs
7/16"	14	32 ft-lbs	27 ft-lbs
1/2"	13	45 ft-lbs	38 ft-lbs
	20	47 ft-lbs	40 ft-lbs
5/8"	11	96 ft-lbs	82 ft-lbs
3/4"	10	131 ft-lbs	111 ft-lbs
1"	8	299 ft-lbs	254 ft-lbs
METRIC			
M5	0.8	45 in-lbs	40 in-lbs
M6	1.0	6 ft-lbs	6 ft-lbs
M8	1.25	15 ft-lbs	14 ft-lbs
M10	1.5	31 ft-lbs	27 ft-lbs
M12	1.75	54 ft-lbs	48 ft-lbs

UNDERSTAND THE BASICS

SHOCKWAVE SUSPENSION SEATS are designed to mitigate shock and vibration encountered in high speed vessel operation in rough seas. Following the recommendations in this section will ensure that you are getting the most out of the product.

CHECK THE ACCURIDE GAUGE

The ACCURIDE gauge is indication that your shock absorber is set up correctly. Keep green arrow in the green zone when seat is occupied and operated.

OPERATE IN THE VESSEL'S DESIGN ENVELOPE

Driving the boat beyond its limitations can have damaging effects on the hull, engines and equipment. SHOCKWAVE Seats are designed to provide shock mitigation to the occupant. They will not protect the occupants from injury caused from operating the vessel outside of its operational envelope.

OPERATE THE VESSEL IN YOUR CREWS PHYSICAL CONDITIONING ENVELOPE

Personal fitness is a limiting factor to the amount of sustained G Loads a person can endure without injury. If you have inexperienced, relatively unfit or overweight persons aboard extra caution must be exercised to prevent injury. The helmsman must be keenly aware of the shock loads being transmitted to others not in a suspension seat or standing as serious injury can occur. Installation of SHOCKWAVE Seats provides an extra level of protection but they will not protect a person from ALL shock loads.

OPERATE IN YOUR OWN ABILITY ENVELOPE

SHOCKWAVE Seating will increase the confidence of the helmsman. Over confidence can lead to loss of boat control. Generally, the seats will permit greater control of the vessel and the helmsman should focus on using the control advantages of shock mitigated seating to better care for the vessel and crew.

DO NOT TIE THE BOAT UP WITH THE SEATS

As tempting as it may be SHOCKWAVE Seats are not designed to tie up the boat. A sudden surge or wave with likely bend the seats or attachment brackets and compromise performance.

ENSURE THAT SEAT IS FUNCTIONING PROPERLY

Refer to the Danger, Caution, Warning and Important notes in the Operations and Service Manual. The following is provided as a general checklist.

Do not operate the seat if:

- The shock absorber setting or ride height is incorrect.
- Components are loose, broken or missing.
- The seat makes a strange noise.

USE SEAT BELTS - IF SUPPLIED

Seat belts prevent occupants from being ejected from the vessel and the seat. When not in use, the seat belt buckle clasps should be fastened to prevent damage to the seat, seat belt and the suspension module.

ADJUST HEIGHT AND FORE AND AFT ADJUST CORRECTLY - IF SUPPLIED

Correct ergonomics and posture enhances the ability to operate the vessel safely and reduces the risk of shock and vibration related injury. Take the time to adjust the seat so that it is comfortable.

DO NOT SIT IN SEATS WITH HARD OR SHARP OBJECTS. DO NOT WALK ON SEATS

Ensure that sharp objects and heavy gear are worn so that they will not tear upholstery.

RINSE SEATS WITH FRESH WATER AFTER EACH USE

Rinse seat with fresh water after each use or every week if being stored outside to prevent a buildup of salt and debris.

COVER SEATS WHEN NOT IN USE

Seat covers are available from SHOCKWAVE to cover all seat. These are a custom order item and can be ordered by contacting SHOCKWAVE.

TIE EVERYTHING DOWN

Pay attention to how you have stowed your gear. Elastic shock cords and ratchet tie downs should be used to secure all gear. Plastic containers of oil and other fluids must be protected from chafing and puncture. Electronic equipment must be secured to prevent damage from shock loads.

CHECK ALL EQUIPMENT

Conventional mounting brackets for heavy items such as fire extinguishers are subject to much more loading than without shock mitigation. Make sure all of your equipment brackets are tight. Recheck major equipment bolts regularly. Wiring, cables and fluid hoses should be bundled tightly and not allowed to flail. Do not allow any objects under the seats or footrests. They will limit the stroke of the seat, damage the objects or damage the seat.

REMOVE OR PAD BODY STRIKE HAZARDS

Hard objects, particularly in the head strike zone, need to be rounded and padded. When assessing your body strike hazards take into account a generous portion of clearance, as the body will stretch in a high G situation.

SETTING SHOCK PRESSURE

To get the best performance out of your SHOCKWAVE Seat, it is important to properly adjust the air pressure on the FOX Float H2O shock absorber. This seat can be adjusted for optimum performance of varying payloads and sea conditions. **Do not adjust air pressure of an occupied seat.**

To set your seat:

1. Remove the air fill cap on the valve located at the top of the seat and attached the SHOCKWAVE pump.
2. If your seat is equipped with a Protune system, ensure the selector switch is set to soft.
3. Inflate the unoccupied seat to the starting pressure shown below.

SHOCKWAVE RECOMMENDED SETUP STARTING PRESSURES

Occupant Weight	Shock Pressure
150 lbs./68 kg.	70 PSI
200 lbs./90 kg.	85 PSI
250 lbs./113 kg.	100 PSI

DANGER

Do not allow shock to bottom out - serious injury can result - warranty is void if shock bottoms out.

4. Sit in the seat, bounce a few times, and stay seated to establish your current ride height.
5. Ensure the arrow on the carriage (or seat) is within the green zone of the ride height indicator decal.

IMPORTANT

For rough seas the arrow on the carriage (or seat) should be at the top of the green zone of the decal located on the seat frame when the seat is occupied. For calm seas the arrow can be towards the bottom of the green zone.



6. Use the supplied SHOCKWAVE pump to add or bleed air from the system to ensure optimum positioning. Repeat steps 4-5 until optimum ride height is achieved.
7. Exit the seat.
8. With the SHOCKWAVE pump connected to the air fill valve, record the pressure. This will be your optimum setup pressure for your seat and weight class.
9. Remove the SHOCKWAVE pump from the air fill valve and reinstall the air fill cap. Failure to install the cap can lead to a corroded air fill valve and air pressure leaks.

DANGER

Do not operate the seat with the arrow below the green zone when the seat is occupied.

The FOX Float H2O shock absorber that SHOCKWAVE uses in your seat is custom built by FOX for SHOCKWAVE. The infinitely adjustable Float H2O shock absorber provides reliability, versatility and adaptability. It features a progressive rate air spring and is a velocity sensitive shock absorber. FOX uses a patented sealing system which is very effective. The shock will hold pressure between settings and only needs to be topped up occasionally.

The seats do not require constant pressure adjustment. If the seat needs regular adjustments then there maybe a leaking issue. To test for a leaking issue, first ensure the shock is filled to 150 PSI then use a soap solution and watch for bubbles. Connections that leak need to be tightened or resealed using a sealer that is appropriate to seal air leaks such as Loctite 545. Flared fittings do not require any thread sealer they should be tightened snugly with a 9/16-inch wrench.

Most of the leaks are caused by air fill valves that have become corroded. Use a 7/16" wrench to replace the air fill valve with a new one, which is available directly from SHOCKWAVE.

MAINTENANCE SCHEDULE

15 YEAR LIFE CYCLE MAINTENANCE PROGRAM - BASED ON 400 HRS./YR.

Service at the indicated hours or months - whichever comes first.

HOURS	400	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000
MONTHS	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180

MAINTENANCE TASK

Cover Seating with Boat Cover or Seat Cover	WHEN NOT BEING USED OR IF STORED OUTSIDE															
Clean Seat - Fresh Water or Wash with Car or Boat Wash	AFTER EVERY EXPOSURE TO SALT WATER SPRAY															
Clean Upholstery - Boat or Automotive Detail Spray Cleaner	AS REQUIRED (REMOVING ANY BUILDUP OF DIRT OR SALT)															
Check Shock Air Pressure	DAILY															
Spray Bansbach and cable with rust inhibiting spray (Boeshield or similar)	EVERY 20 HOURS															
Protect Metal Surfaces and Fasteners - LPS I® or a Good Quality Wax	EVERY 40 HOURS (AFTER SEATS HAVE DRIED FROM CLEAN)															
Lubricate Roller Guide - Sailkote Dry Lubricant	EVERY 125 HOURS															
Lubricate Height Adjust Mechanism - LPS I®	EVERY 125 HOURS															
Lubricate Fox Shock Absorber Shaft - After cleaning apply LPS I®	EVERY 125 HOURS															
Check Fastener Torques	EVERY 125 HOURS															
	HOURS	400	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000
	MONTHS	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
Inspect / Replace Roller Guide Wheels			X		X		X		X		X		X		X	

TROUBLESHOOTING GUIDE

CONDITION	CAUSE	REMEDY
Seat is lower than normal or will not pressurize.	<ul style="list-style-type: none"> • Seat Pressure is too low. • Leak in system. • Worn or corroded fill valve. • Defective system plumbing. • Defective shock absorber. 	<p>Attach pump and add air as per this manual – fill to 150 PSI.</p> <p>Check system for leaks. Apply soapy water to system connections and look for bubbles. Tighten or replace offending parts. Seal with Loctite.</p> <p>Remove air fill valve and replace with new one from auto supply store or from SHOCKWAVE.</p> <p>Remove all plumbing and install air fill valve directly to shock absorber. This will by-pass all hoses and systems and will allow the seat to be operated until the system can be repaired.</p> <p>Replace shock absorber. This happens only on extremely rare occasions.</p>
Seat is topping. Ride is rough and erratic. Noise heard or shock felt when seat comes to top of travel. Seat is “bucking off” occupant.	<ul style="list-style-type: none"> • Too much air pressure. 	<p>Reduce air pressure with BLEED button on pump.</p>
Squeaking noise when underway.	<ul style="list-style-type: none"> • Roller Guide needs lubrication. • Loose components. • Shock Absorber shaft is dry. 	<p>Add Sailkote Lubricant to roller guide.</p> <p>Tighten loose components.</p> <p>Remove rear cover and grease shock shaft with grease or LPS I.</p>
Seats moving fore and aft – on seats equipped with fore and aft adjustment.	<ul style="list-style-type: none"> • Deck Track Lock not engaged. • Deck Track Lock is broken. 	<p>Turn and twist Deck Track Knob.</p> <p>Replace broken components.</p>
Height Adjust not working – on seats equipped with height adjustment.	<ul style="list-style-type: none"> • Cable to locking gas spring is damaged or broken. 	<p>Check components for operation and replace if necessary.</p>
Height Adjust or Deck Track will not move.	<ul style="list-style-type: none"> • Track cars are damaged or out of adjustment. 	<p>Adjust track cars as per instructions.</p>
Moving Components or Accessories will not move.	<ul style="list-style-type: none"> • Bearing or sliding mechanism is corroded, dry or binding. • Unauthorized modification of components or installation of screws that are jamming components of roller guide. 	<p>Disassemble if necessary and lubricate with marine grade grease.</p> <p>Check that added screws or equipment are not interfering with normal seat or accessory movement. Check that parts are not bent or loose.</p>
Clanging sound when underway.	<ul style="list-style-type: none"> • Seat belt buckles not secure. 	<p>Always wear seat belts and secure belts when not in use.</p>

WARRANTY

Shockwave Seats expressly warrants that all mechanical seat components in its MARINE AND OTHER and SUSPENSION SEATS shall be free from defects in material and workmanship for one year from the date-of-sale provided such seats are subject to normal use and receive proper maintenance. Shockwave Seats expressly warrants that the cushions and seat covers shall be free from defectively sewn seams for a period of 90 days or 750 hours of use, whichever comes first, excluding normal wear and tear. Rips, tears, abrasions and installation damages are not covered by warranty.

Your sole and exclusive remedy against Shockwave Seats arising from the purchase or use of MARINE AND OTHER and SUSPENSION SEATS is limited to repair or replacement of defective materials or defective workmanship, after verification by Shockwave Seats. Defective product or materials may be requested for return by Shockwave Seats for inspection prior to issuing any replacements. Freight charges for returns are to be covered by the user.

All warranty claims shall have prior approval from Shockwave Seats warranty department and must be accompanied by the information requested on the following Claim Form. Products will be repaired or replaced at the sole discretion of Shockwave Seats.

These warranties will become null and void if:

- The seat is abused or altered
- The seat is involved in an accident
- The seat is improperly installed
- The seat is used for other than its intended use, contrary to any of the instructions in the manual provided
- There is damage to the seat caused during installation or unpacking
- There is damage to the cushions and covers caused by cuts, burns, or abuse
- There is damage to the structural integrity as a result of the user installing unapproved accessories

WARRANTY DISCLAIMERS AND LIMITATIONS OF LIABILITY

THE ABOVE EXPRESSED WARRANTIES SHALL BE THE EXCLUSIVE WARRANTIES, AND SHOCKWAVE SEATS MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED. SHOCKWAVE SEATS EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

IT IS AGREED THAT SHOCKWAVE SEATS SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, including, but not limited to, loss of income, loss of use, lost profits, damage to other property, the cost of removing and reinstalling the INDUSTRIAL SEATING or SUSPENSION SEATS, attorney's fees, and any liability you may have with respect to any other person.

TIME LIMIT ON COMMENCING LEGAL ACTION

It is agreed that you have one year from the accrual of a claim to commence any legal action arising from the purchase or use of the MARINE AND OTHER or SUSPENSION SEATS, or be barred forever.

Failure to give prompt written notice within ten (10) days of the discovery of any defect in material or workmanship that occurs within the warranty period will void the warranty. Send notification and completed warranty claim form to:

SHOCKWAVE SEATS Warranty Department

Unit 2-2075 Henry Avenue West, Sidney BC Canada V8L 1T2

Email: support@shockwaveseats.com - Phone: +1.250.656.6165 - Fax: +1.250.655.4334

WARRANTY CLAIM FORM MUST BE SUBMITTED

Download your Warranty Claim Form at shockwaveseats.com/warranty

To the extent any provision of this Limited Warranty contravenes the law of any jurisdiction, such provision shall be inapplicable in such jurisdiction, and the remainder of this Limited Warranty shall not be affected thereby.

WARRANTY CLAIM FORM

To initiate your warranty claim use the following form. Submit accompanying photos, proof of purchase, and this form to support@shockwvaseats.com.

Technical Case Number (internal use only):

Please provide the following information:

Date: _____ Invoice Number: _____

First Name: _____ Last Name: _____

Organization or Company Name: _____

Phone Number: _____ Fax Number: _____

Email: _____ Serial Number: _____

Ship to Address: _____ City: _____

Province/State: _____ Postal/Zip Code: _____ Country: _____

Mailing Address: _____ City: _____

Province/State: _____ Postal/Zip Code: _____ Country: _____

Boat or Project Identification: _____ Type of Seat: _____

Date Vessel in Service: _____ Number of Seats Affected: _____

Nature of Problem: _____

Comments: _____

EMAIL support@shockwvaseats.com
ADDRESS 2074 Henry Avenue, Sidney BC Canada, V8L 5Y1
PHONE +1.250.656.6165
FAX +1.250.655.4334
HOURS 8 AM to 5 PM Pacific Standard Time
WEBSITE shockwvaseats.com



WARRANTY CLAIM PROCEDURE

1. Contact SHOCKWAVE Technical Support Engineers (TSE)
 - A. Submit a tech question to support@shockwavesseats.com
 - B. Contact by phone: +1.778.426.8544
2. Our TSE will need the following:
 - A. Complete contact information including e-mail and telephone.
 - B. Details relative to the issues with the product and photographs (if possible).
 - C. Perform necessary trouble shooting functions to determine a cause.
3. If the product is deemed defective and covered under warranty, the TSE will create a Technical Case with case number.
 - A. The Technical Case number is either issued to customer support for warranty replacement.
 - B. Or the Technical Case number is used to create a service technician request if deemed necessary by the TSE.
 - C. Defective parts are to be returned unless waived by the TSE.
4. The Technical Case is used to create a warranty Sales Order (SO)
 - A. A warranty Work Order (WO) is created which creates demand for the product.
 - B. If the product is in stock it will ship within 24 hours of dispatch from technical support.
 - C. Notification of shipment is emailed at time of shipment, which includes expected delivery date and tracking information.
5. The Technical Case is dispatched to Customer Support to create the Return Material Authorization number (RMA)
 - A. The RMA notification is emailed within two business days following the case dispatch from Technical support.
 - B. The RMA notification contains all the necessary return instructions including part number, quantity and return address.

■ SERVICE AND REPAIR PROCEDURE

- 1.** SHOCKWAVE Seats can provide complete service and repairs for our products anywhere in the world. The procedures listed below cover repairs and service that can only be conducted by SHOCKWAVE technicians.
- 2.** Contact SHOCKWAVE Technical Support Engineers (TSE)
 - A.** Submit a quote request to support@shockwavesseats.com
 - B.** Contact by phone: +1.778.426.8544
- 3.** Our TSE will need to:
 - A.** Complete contact information including e-mail and telephone.
 - B.** All details relative to the request including serial numbers and photographs.
 - C.** Request some trouble shooting by the customer to determine a cause of the problem if possible.
- 4.** If the customer request SHOCKWAVE to perform the work at the SHOCKWAVE facility, the TSE will provide:
 - A.** A quotation based on a worse-case scenario that may be subject to change.
 - B.** Cost of labour, lead time and shipping costs will be included in the quotation and are subject to change.
 - C.** Sales order confirmations will be provided upon customer approval of the assessment. Sales orders may be changed upon completion of the work if previously unknown issues are discovered that require repair or part replacement.
 - D.** Customer will be provided with updates on progress.
- 5.** Should the customer require repairs anywhere in the world, a quotation including logistical costs for sending a technician and materials off site will be provided:
 - A.** Travel time, hotel, labour and cost of transportation of necessary materials will be included in the quote.
 - B.** Costs may change due to unforeseen items found in the inspection.
 - C.** A reasonable time line will be provided.
- 6.** If the product is shipped to the SHOCKWAVE facility, the repair or replacement process will begin ASAP.
 - A.** If components are in stock SHOCKWAVE will make every attempt to replace or repair ASAP.
 - B.** Once the product is repaired or replaced it will ship within 24 hours.
 - C.** Notification of shipment is emailed at time of shipment, which includes expected delivery date and tracking information.